Parental Education and Child Health Care: Evidence from Nigeria

Odubunmi Ayoola Sunkanmi, PhD
Omobitan Olufunsho, PhD
Department of Economics
Lagos State University
Ojo, Lagos Nigeria.

Abstract
The magnitude of child mortality in Nigeria shows that child healthcare demand has not been significantly addressed by the policy makers. As a result of this, this study examined the impact of parental education on child health care in Nigeria. The study adopted the use of the Multinomial (MLM) estimation techniques in the attempt to determine the influence of Parental education on child Health care. Our result revealed that having some education is associated with a higher likelihood of seeking health care, though the effect is only significant for hospital care at the primary school level. The demand for health care from health post and pharmacy for education levels lower than primary education does not significantly differ from that of individuals with no education. More noticeable, however, is the significantly increasing demand for health care facilities (hospital, pharmacy and health post) at increasing education level of secondary school and post secondary school level relative to traditional care. The results at the age group level offered more interesting scenario. The education of the parent was used as a proxy for education of the 0-5 year’s age group. Parents with primary school education will demand for traditional care over health post and pharmacy. In sharp contrast, there is evidence that parents with secondary school education preferred hospital care, health post care and pharmacy care over traditional health care. This confirms the importance of education in the demand for health care of the child in Nigeria. The study therefore suggests the need for stronger commitment to child healthcare and recommends free health care service for children 0-5 year in all government hospitals. This will enable their parents who are educationally disadvantaged access to orthodox health care since their level of income may be a hindrance in accessing these facilities.

Keywords: education, parental, Multinomial Logit, child mortality.

JEL Classification: I 15

Introduction
Evidence that the poor often benefit less from public spending is well established in the literature (Demery 2000; Makinen et al. 2000). The reason why the poor do not make more use of public services is driven by both supply and demand factors. The report on Macroeconomics and Health reinforced the need to overcome the substantial barriers to access that exist for the poorest (Sachs 2001). The focus of much health policy intervention has been on reducing supply barriers. Delivery of essential services concentrates on improving the quality of staff skills, protocols of treatment, availability of supplies and environment of health facilities. Yet while these interventions are important, they do not address many of the barriers to accessing services faced by a patient in a low-income country. Whether and where to go for treatment starts well before arrival in a facility and requires a myriad of complex, and potentially confusing, choices to be made. Often, health services of a reasonable quality exist, but few use them. Just as important are the physical and financial accessibility of services, knowledge of what providers offer, education about how to best utilize self and practitioner-provided services and cultural norms of treatment. A healthcare system that meets the needs of a developing country such as Nigeria requires a thorough understanding of not just why the present healthcare system fails to deliver healthcare to the child but also the dynamics of healthcare decision processes of parents which is Suppose to be determined by the level of parents education.
Such a good understanding will help in redefining the objectives of national healthcare policy and those of the active players in the healthcare delivery system. The 1990s decade represents a very difficult period for most Nigerian households. The adverse effects of the macroeconomic policies of previous decades, such as the Structural Adjustment Programme (SAP), combined with the political instability in the country generated economic shocks across the country.

According to Ichoku and Leibbrandt (2003) there was rapid decline in most major macroeconomic indices. For example, the economy that was growing at the rate of 7.5 per cent in the 1970s recorded, on average, zero growth for the greater part of the decade. Per capita income fell from $860 in the early 1980s to below $300. The national currency, the naira, was devalued by more than 11,000 per cent. External debt grew to over $30 billion or $200 per capita at the end of the 1990s (Green, 2001). This represented about 144 per cent of 1993 GDP of the country (Kpakol, 2001), Debt service ratio was as high as 71 per cent in some years within that decade (Obadan, 2001; Ajayi, 2001). Nigeria has also witnessed high rates of inflation especially in the 1990s. Inflation is one of the macroeconomic indicators that contribute to people’s vulnerability to poverty because it undermines investment and impedes economic growth. The greater part of the 1990s inflation stayed above 50 per cent and industrial capacity utilization was as low as 30 per cent in some years. Apart from eroding people’s real wages and their overall purchasing power, inflation hurts the poor because most of their transactions use financial assets that are not protected from erosion of inflation. Political instability brought insecurity and social welfare to very high levels. It was estimated that about $100 billion left the country in the form of capital flight due to political instability (Soludo, 2001). Social infrastructure and physical environment have deteriorated.

In the face of continued severe economic crises, many households could no longer afford the basic necessities of life for their children. The ability of households to cope with adverse economic conditions was strained. Life expectancy at birth was 43.3 years in 2004. Difficult trade-offs continue to be made in an attempt to keep households afloat. Nutritional intake and other health-enhancing inputs into the household health production function, such as leisure and sports, have either been reduced or eliminated altogether from the household schedule. These economic crises have led to breakdowns in the health of individuals, households and communities. For example, only about 10% of Nigerians in 1998 had access to essential drugs; physician per 100,000 people were fewer than 30; access to safe drinking water in 1999 was limited to about 50% of the population, and less than 40% of the rural population had access to safe drinking water, as against the 80% in urban areas, among other set of indicators. The advances made against some of the communicable and preventable diseases during the period of economic growth of the 1970s and early 1980s have been eroded (Pearce and Falola, 1994). Because of economic barriers many households can hardly afford medical care. The reporting of illnesses is delayed until the illness becomes severe because the cost of medical care has to be weighed against other pressing household needs such as food and education.

Under conditions such as these, children are usually the most vulnerable group, given their physical weakness (Vogel, 1988). infant mortality stood at an average of 75.1 per 1000 live births ranking among the highest in the world (CBN, various issue). It has been estimated that about 200,000 Nigerian children die every year from diarrhoea-related illnesses while about 650,000 people are afflicted by Guinea worm (Ayogu, 1999). The proportion of children fully immunized had dropped from 30% in 1990 to 17% in 1999 and almost 40% of the children in the later year had never received any vaccination; the struggle by parents to provide for their children especially among poor households means reallocation of time and resources. Literature on child status has consistently shown that parents education is an important factor in predicting child health status

Consequently, certain questions therefore appear pertinent. What role does parent’s education play in child health care demand? And Does parents’ education have any significant effect on child’s health status and survival?

The rest of this paper has been structured into four sections. Section one examines the health system and health states of Nigerians, section two examines the theoretical issues on demand for health care. Section three entails the methodology of the study and interpretation of result that emanates therein and section four concludes the paper.
Section I

Nigerian Health System and Health States of Nigerians

The Nigerian Health System and Health States of Nigerians

The health care system consists of all personal medical care services—prevention, diagnosis, treatment, and rehabilitation (services to restore function and independence)—plus the institutions and personnel that provide these services and the government, public, and private organizations and agencies that finance service delivery. The health care system may be viewed as a complex made up of three interrelated components: people in need of health care services, called health care consumers; people who deliver health care services—the professionals and practitioners called health care providers; and the systematic arrangements for delivering health care—the public and private agencies that organize, plan, regulate, finance, and coordinate services—called the institutions or organizations of the health care system. The institutional component includes hospitals, clinics, and home-health agencies; the insurance companies and programs that pay for services, managed-care plans such as health maintenance organizations (HMOs), and preferred provider organizations (PPOs); and entitlement programs.

Other institutions are the professional schools that train students for careers in medical, public health, dental, and allied health professions, such as nursing. Also included are agencies and associations that research and monitor the quality of health care services; license and accreditation providers and institutions; local, state, and national professional societies; and the companies that produce medical technology, equipment, and pharmaceuticals. Much of the interaction among the three components of the health care system occurs directly between individual health care consumers and providers. Other interactions are indirect and impersonal such as immunization programs or screening to detect disease, performed by public health agencies for whole populations. All health care delivery does, however, depend on interactions among all three components. The ability to benefit from health care depends on an individual's or group's ability to gain entry to the health care system. The process of gaining entry to the health care system is referred to as access, and many factors can affect access to health care.

The Nigerian health sector is broad and comprises of public, private for-profit, nongovernmental organizations (NGOs), community-based organizations (CBOs), faith-based organizations (FBOs), and traditional health care providers. The health sector is very heterogeneous, and includes unregistered and registered providers ranging from traditional birth attendants and individual medicine sellers to sophisticated hospitals. Thirty-eight percent of all registered facilities in the FMOH health facilities database are privately owned, of which about 75% are primary care and 25% are secondary care facilities (World Bank, 2005). Private facilities account for one-third of primary care facilities and could be a potentially important partner in expanding coverage of key health services.
The seminal paper by Grossman (1972) and his subsequent works laid the foundation for the literature that emerged in the last three decades on the demand for health services and formed the basis for the large empirical work that followed. The main thrust of the theory behind health demand in the literature is that generally individuals make informed choices over the life cycle to improve their health status by investing in health care systems, conforming to health-enhancing behaviors and practices given their initial health endowment inherited genetically from their parents and environment. These decisions take the form of investment in health following the literature on human capital, particularly education, as a means to better livelihood and consumption where good health features as an end in itself. Grossman (1972) constructed a model where individuals use medical care and their own time to produce health. Individual is assumed to invest in health production until the marginal cost of health production equaled the marginal benefits of improved health status. Health status was assumed to affect utility directly by the value that individual place on good health per se and indirectly through increasing healthy time and, hence, labour income. According to the model the demand for health increases with the income, because as income increases the value of the labour time increases. Education should also increase the demand, because more education makes health inputs more productive.
Age and other factors that make health stock to depreciate will decrease the demand for health, because the marginal benefits of investments into health will decrease. The price of the health care decreases the health demand, because investments become more costly. On the other hand, the demand for health care, which is considered an investment and consumption good to produce health, depends on factors affecting the benefits and costs of health care inputs. Demand for health care inputs increases with income and decreases with the price of health care. The effect of age and education is not so clear. Provided that rate of depreciation of health stock rises with age then ageing reduces both the amount of health stock demanded (because marginal benefits are decreased) and health capital supplied (because less health capital is left over) by individuals, so the net effect is ambiguous a priori. Moreover, as education increases both the demand for health and the productivity of health inputs, the effect of rising education on the demand for health care is not certain.

A number of studies have tried to extend Grossman’s insightful work model in several directions. In the immediate period after the Grossman’s study, Acton (1975) introduced the cost of time (travel and waiting time) into the Grossman’s model and has shown that these variables are important determinants of utilization in New York City. Phelps (1976) and Cropper (1977) introduced uncertainty into the Grossman’s basic model. Cropper begins with a model in which consumers are risk-averse, but the rate of depreciation on the stock of health does not depend on age. She introduces risk-neutrality when she allows the rate of depreciation to depend on age. Cropper assumes that illness occurs in a given period if the stock of health falls below a critical sickness level, which is random. An increase in the stock of health lowers the probability of this state. Cropper (1977) further assumes that savings are not possible (all income takes the form of earnings) and that consumers are risk-neutral in the sense that their objective is to maximize the expected discounted value of lifetime wealth. Shakotko (1977) studied theoretically and empirically causality among health, assets, and wages using fixed and random effects econometric models. Sindelar (1979) employed a demand for health framework and detailed measures of the money and time prices to explain male-female differences in the utilization of medical care services. Slade used a similar perspective to introduce disability insurance into the demand function for medical care.

Ippolito (1981) employed similar techniques to examine the optimal age profile of consumption of goods that are hazardous to health. Coyte (1982) constructed a competitive market equilibrium model of the medical sector in which the behavior of consumers is modeled in terms of an underlying demand for health. Reynolds (1980) adopted a Bayesian approach to focus on causality between health and income in the cross section. Shakotko et al. (1981) obtained a variety of estimates of the impact of the home environment in general and mother’s schooling in particular on child and adolescent health. Slade (1981) used a similar perspective of Sindelar (1979) to introduce disability insurance into the demand function for medical care. Extending the Grossman’s model, Muurinen (1982) examines comparative static age, schooling, and wealth effects in the context of a mixed investment-consumption model with perfect certainty. This approach can be regarded to be more general than the Grossman’s model because it incorporates both the investment motive and the consumption motive for demanding health. In deriving formulas for the effects of increases in age and schooling on the optimal quantities of health capital and medical care, Muurinen assumes that the undiscounted monetary value of the marginal utility of healthy time in period t, is constant for all t.

The thrust of Cropper’s main result is that consumers with higher incomes or wealth levels will maintain higher stocks of health than poorer persons. While this may appear to be a different result than that contained in Grossman’s pure investment model with perfect certainty, it appears not for two reasons. First, an increase in the stock of health lowers the probability of illness but has no impact on earnings in non-illness states. Hence the marginal benefit of an increase in the stock is given by the reduction in the probability of illness multiplied by the difference between income and gross investment outlays. Holding these outlays constant, an increase in income raises the marginal benefit and the marginal rate of return on an investment. Therefore, this wealth or income effect is analogous to the wage effect in the Grossman’s pure investment model with perfect certainty. Second, in a pure investment model with perfect certainty, positive initial assets but no possibility to save or borrow in financial markets with investment in health as the only mechanism to increase future consumption. An increase in initial assets will increase the optimal stock of health provided future consumption has a positive wealth elasticity.

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1 This variables were included because the geographical distribution of services may make access more difficult for some groups. For example, locating facilities closer to the upper and middle classes discriminates against the poor.
The introduction of uncertainty in the context of demand for health models by other studies assumed risk-averse behavior, so that an expected utility function that exhibits diminishing marginal utility of present and future consumption is maximized. By way of illustration, Dardanoni and Wagstaff (1987) and Selden (1993) employed two-period models in which the current period utility function depends only on current consumption. Uncertainty in the model arises because the earnings-generating function in that model contains a random variable. This function is \( Y_2 = W_2(H_2, R) = F(H_2, R) \), where \( Y_2 \) is earnings in period two, \( H_2 \) is the amount of healthy time in that period, \( H_2 \) is the stock of health, and \( R \) is the random term. Clearly, \( F_1 > 0 \) and \( F_{11} < 0 \), where \( F_1 \) and \( F_{11} \) are the first and second derivatives of \( H_2 \) in the earnings function. The second derivative is negative because of my assumption that the marginal product of the stock of health in the production of healthy time falls as the stock rises. An increase in \( R \) raises earnings \( (F_2 > 0) \). In addition to income or earnings from health, income is available from savings at a fixed rate of return.

**Section III**

**Methodology and Interpretation of Results**

**Empirical Specification of the Study**

Following the approach of Lindelow (2002), the empirical analysis of this study is underpinned by a basic theoretical framework of utility maximization of health. In this framework, utility of individual \( i \) is a function of \( h, \) health status, and \( x, \) non-health consumption: 

\[
U = U(h, x_i) \tag{1}
\]

Utility is maximized subject to a health production function of individual and a budget constraint:

\[
h = h(C_i, F_i, R_i, M, E, Z) \tag{2}
\]

\[
x = y - p_C C - p_F F \tag{3}
\]

However, since this study attempts to find out the influence of Parental Education on Health care demand of the child, equation (2) is modified as,

\[
h = h( R) \tag{4}
\]

\( R = \) Individual attributes (Age, Gender, Education attainment)

We can further modify equation (4) as

\[
h = h(A, G, E) \tag{5}
\]

Using the constraints, the utility function can be expressed as,

\[
U = u(h(A, G, E), y - p_C C - p_F F) \tag{6}
\]

This equation can be used as the basis for a random utility model for polychotomous choice. Conditional on being ill, an individual faces \( J \) options. Each option differs in terms of its impact on health status and total cost. So, for choice \( j \), we can define \( V_j^* \) as the level of indirect utility associated with that alternative:

\[
V_j^* = U(h(C_j, A, G, E), y - p_C C - p_F F) \tag{6}
\]

The observed variable, \( V_j \), is defined as:

\[
V_j = 1 \text{ if } V_j^* = \max (V_1^*, V_2^*, ..., V_J^*) \tag{7}
\]

\( V_j = 0 \) otherwise

\( V_j \) is, however, observed conditional on an individual being ill, giving rise to a potential selection problem.

**Description of Variables and A-Priori Expectation.**

A-priori we expect Education to have a positive impact on health care, while age and gender will have a negative effect on health care demand.

**Estimation Technique of the Study**

This study adopts the use of the Multinomial (MLM) estimation techniques in the attempt to determine the influence of Parents education on child Health care demand in Nigeria. McFadden (1981) shows that the Multinomial Logit Model (MNLM) can, under certain conditions, be derived from the latent variable model by specifying the distribution of error terms as IID with type I extreme value distribution (Lindelow, 2002). The basic multinomial logit model is:
$$\Pr(y = j) = \frac{e^{\beta_j}}{e^{\beta_1} + ... + e^{\beta_j} + ... + e^{\beta_J}}$$

Domencich and McFadden (1975) argued that the strength of the multinomial model (though) is that the addition of a new alternative while decreasing the probability that an alternative is chosen does not alter the relative odds of the existing ones. In other words, the ratio of the odds of choosing facility 0 to the odds of choosing facility 1 does not change because of the addition of facility 2. However, the main weakness is that for the relative odds of alternative 0 to alternative 1 to remain the same, the new alternative must be perceived as completely distinct and independent. Furthermore, the model implies that the effect of the introduction of the new alternative on the existing ones is the same. That is, the model implies constant cross-elasticity of demand in which substitution is difficult (Ichoku and Leibbrandt, 2003).

**Sources of Data**

The data set used for this study is the Nigerian Living Standards Survey (NLSS) of 2004 carried out by the National Bureau of Statistics in order to contribute to a better understanding of the current health care system. The choice of the 2004 survey is predicated on the fact that it is the most recent household survey conducted in Nigeria. The Nigerian Survey fits with a number of studies conducted throughout the world, in an effort to have internationally comparable statistics on a number of socio-economic conditions.

**Discussion of Results**

**Descriptive Statistics**

The descriptive statistics from the empirical analysis carried out centered on the personal characteristics and Health history of the child in terms of age and facility consulted. It should be noted that the decision to consult any facility is the decision of the parents and not that of child. Likewise parents education equally represents the child educational profile. In Panel 1 of Table 1 a total of 10,965 respondents were reportedly ill during the exercise. The statistics in Table 1 shows children 0-5 years are the second category of people that illness affects mostly with a total of 2,418, the bulk coming from the North-West. In terms of sex distribution female children are about 51.5% of the total respondents while the rest 48.5% are male.

**Table 1: Personal Characteristics**

<table>
<thead>
<tr>
<th>Geo-political zones</th>
<th>AGE 0-5</th>
<th></th>
<th>Marital status</th>
<th>AGE 0-5</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>N/E</td>
<td>579 (23.9)</td>
<td></td>
<td>Monogamous marriage</td>
<td>0 (.0)</td>
<td></td>
</tr>
<tr>
<td>N/W</td>
<td>722 (29.9)</td>
<td></td>
<td>Polygamous marriage</td>
<td>0 (.0)</td>
<td></td>
</tr>
<tr>
<td>N/C</td>
<td>400 (16.5)</td>
<td></td>
<td>Separated</td>
<td>0 (.0)</td>
<td></td>
</tr>
<tr>
<td>S/E</td>
<td>281 (11.6)</td>
<td></td>
<td>Never married</td>
<td>2418 (100)</td>
<td></td>
</tr>
<tr>
<td>S/W</td>
<td>155 (6.4)</td>
<td></td>
<td>Total</td>
<td>2418 (100)</td>
<td></td>
</tr>
<tr>
<td>S/S</td>
<td>281 (11.6)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2418 (100)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sector</td>
<td></td>
<td></td>
<td>Religion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>496 (20.5)</td>
<td></td>
<td>Christian</td>
<td>1059 (43.8)</td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>1922 (79.5)</td>
<td></td>
<td>Muslim</td>
<td>1334 (55.2)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2418 (100)</td>
<td></td>
<td>Others</td>
<td>25 (1.0)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Total</td>
<td>2418 (100)</td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td>Highest level attained</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1281 (53.0)</td>
<td></td>
<td>None</td>
<td>2402 (99.3)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>1137 (47.0)</td>
<td></td>
<td>Primary</td>
<td>16 (.7)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2418 (100)</td>
<td></td>
<td>Secondary school</td>
<td>0 (.0)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Post-secondary school</td>
<td>0 (.0)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Total</td>
<td>2418 (100)</td>
<td></td>
</tr>
</tbody>
</table>

Note: in Panel A, figures are frequencies and percentages within age are in brackets; Author’s computations using SPSS for Windows Version 16.0; underlying data from NLSS, 2004.
Econometrics Results
Multinomial Logit Model

The empirical model assumes that choice of health care is a function of individual characteristics, (gender, age and education). The result of the multinomial logit model is presented in Table 2. The base factor in all the multinomial regression analysis is traditional care.

Table 2: Multinomial Logit Model of Demand for Health for 0-5 years old

<table>
<thead>
<tr>
<th>0-5</th>
<th>Hospital</th>
<th>Health post</th>
<th>Pharmacist</th>
</tr>
</thead>
<tbody>
<tr>
<td>No care</td>
<td>-9.534</td>
<td>0.001</td>
<td>-0.001</td>
</tr>
<tr>
<td>Transportation cost</td>
<td>-14.481</td>
<td>0.001</td>
<td>-0.001</td>
</tr>
<tr>
<td>Consultation Time</td>
<td>-14.441</td>
<td>-0.013</td>
<td>-0.005</td>
</tr>
</tbody>
</table>

Individual Characteristics

In the discussion of descriptive statistics, it was shown that reporting of illness was slightly higher for females than males. This is confirmed by the regression results, and the hypothesis that all coefficients on gender are equal to zero is rejected. The result indicates that females are more likely than males to seek traditional care relative to hospital, health posts and pharmacy. Similar significant gender differences are observed for no care relative to traditional care for the age group 0-5 years. This is similar to the result presented by Kasirye et al. (2004) which reported that males are significantly less likely to seek care from public facilities in Uganda.

Education enters the model in the form of three dummies (primary education, secondary education and post-secondary education) with no education as the base category. The results suggest that having some education is associated with a higher likelihood of seeking health care, though the effect is only significant for hospital care at the primary school level. In order words, the demand for health care from health post and pharmacy for education levels lower than primary education does not significantly differ from that of individuals with no education. It is more likely that an individual with primary education seeks care at a hospital to the alternative traditional care. More noticeable, however, is the significantly increasing demand for health care facilities (hospital, pharmacy and health post) at increasing education level of secondary school and post secondary school level relative to traditional care. This is similar to the result reported by Kasirye et al. (2004). The highly significant association observed between education level and the likelihood of seeking health care might be due to the fact that more educated individual are more enlightened about orthodox medicine over traditional health care. In addition, they also earn more income and more likely to afford health care for hospital, pharmacy and health post. The results at the age group level offered more interesting scenario. The education of the parent was used as a proxy for education of the 0-5 years age group. The result in Table 2. Shows that parents with primary school education will demand for traditional care over health post and pharmacy. In sharp contrast, there is evidence that parents with secondary school education prefers hospital care, health post care and pharmacy care over traditional health care. This confirms the importance of education in the demand for health care of the child in Nigeria.

Section IV
Summary of Findings, Conclusion and Recommendations.

Our descriptive and empirical results show that increasing demand for health care facilities (hospital, pharmacy and health post) is a function of the level of education. There is a high association between education level and the likelihood of seeking health care, educated individuals are more enlightened about orthodox medicine over traditional health care. We can therefore infer from our findings that parents educational background will positively affect the child health care demand and health status.
Conclusion

The magnitude of child mortality in Nigeria shows that child healthcare demand has not been significantly addressed by the policy makers. Therefore; there is need for stronger commitment to child healthcare. We need to reduce the problems militating against effective performance of the health sector such as; inefficiency, wasteful use of resources, low quality of services, unmotivated workforce and poor enabling environment. Besides this, it is essential for federal government to make health care free for 0-5 years children, this will enable their parents who are educationally disadvantaged to be able to have access to orthodox health care since their level of income may be a hindrance in accessing these facilities.

References


